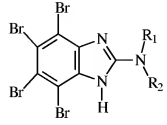
Amendments to the Claims:

1. (Previously presented) A derivative of 4,5,6,7-tetrabromobenzimidazole of **Formula 1**



,

Formula 1

wherein

R_1 is a hydrogen or an aliphatic group; and

R_2 is an aliphatic group, optionally substituted with a substituent selected from a hydroxyl and a substituted amino group.

2. (Previously presented) The derivative according to Claim 1, which is 2-methylamino-4,5,6,7-tetrabromo-1H-benzimidazole.

3. (Previously presented) The derivative according to Claim 1, which is 2-dimethylamino-4,5,6,7-tetrabromo-1H-benzimidazole.

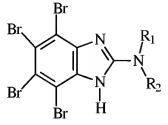
4. (Previously presented) The derivative according to Claim 1, which is 2-ethanolamino-4,5,6,7-tetrabromo-1H-benzimidazole.

5. (Previously presented) The derivative according to Claim 1, which is 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole.

6. (Previously presented) The derivative according to Claim 1, which is 2-(2-hydroxypropylamino)-4,5,6,7-tetrabromo-1H-benzimidazole.

7. (Previously presented) The derivative according to Claim 1, which is 2-(2-dimethylaminoethylamino)-4,5,6,7-tetrabromo-1H-benzimidazole.

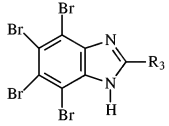
8. (Previously presented) A method of preparation of a derivative of 4,5,6,7-tetrabromobenzimidazole of Formula 1



Formula 1

comprising

(a) reacting a compound of **Formula 2**



Formula 2

with an amine at an elevated temperature; and

(b) purifying the resulting product by crystallization or silica gel chromatography

wherein

R_1 is a hydrogen or an aliphatic group;

R_2 is an aliphatic group, optionally substituted with a substituent selected from a hydroxyl and a substituted amino group; and

R_3 is a halogen, an alkylthio, an alkoxy, a sulfone or an alkylsulfoxide.

9. (Previously presented) The method of Claim 8, wherein R_3 is selected from the group -Cl, -Br, CH_3S-, C_2H_5S-, C_3H_7S-, CH_3O, and C_2H_5O-.

10. (Previously presented) The method according to Claim 8 wherein said amine is a primary lower aliphatic amine.

11. (Previously presented) The method according to Claim 10 wherein said primary aliphatic amine includes in the aliphatic chain additionally hydroxyl groups or substituted amino groups.

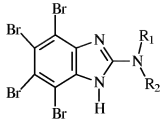
12. (Previously presented) The method according to Claim 8 wherein said amine is a secondary lower aliphatic amine.

13. (Previously presented) The method according to Claim 8 wherein said amine is used both as a reagent and as a co-solvent in an aqueous or alcoholic solution.

14. (Previously presented) The method according to Claim 8 wherein the reaction of said compound of Formula 2 with said amine is carried out at a temperature in the range between 80 to 140 °C.

15. (Cancelled)

16. (Previously presented) A pharmaceutical composition exhibiting an anti-leukemic activity comprising a pharmaceutically-effective amount of a derivative of 4,5,6,7-tetrabromobenzimidazole of **Formula 1**



Formula 1

and at least one inert, pharmaceutically acceptable carrier or diluent wherein

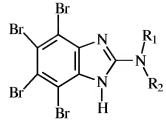
R_1 is a hydrogen or an aliphatic group; and

R_2 is an aliphatic group, optionally substituted with a substituent selected from a hydroxyl and a substituted amino group.

17. (Previously presented) The pharmaceutical composition of claim 16, wherein said derivative of 4,5,6,7-tetrabromobenzimidazole of **Formula 1** is selected from the group consisting of 2-methylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-dimethylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-ethanolamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole; and 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-(2-hydroxypropylamino)-4,5,6,7-tetrabromo-1H-benzimidazole; and 2-(2-dimethylaminoethylamino)-4,5,6,7-tetrabromo-1H-benzimidazole.

18-19. (Cancelled)

20. (Currently amended) A method of inhibiting caseine kinase 2 activity in a patient in the need of such treatment whereby human leukemia is treated, comprising administering to said patient a pharmaceutically-effective amount of the compound of **Formula 1**



Formula 1

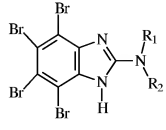
wherein

R_1 is a hydrogen or an aliphatic group; and

R_2 is an aliphatic group, optionally substituted with a substituent selected from a hydroxyl and a substituted amino group.

21. (Previously presented) The method of Claim 20, wherein said compound of **Formula 1** is selected from the group consisting of 2-methylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-dimethylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-ethanolamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole; and 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-(2-hydroxypropylamino)-4,5,6,7-tetrabromo-1H-benzimidazole; and 2-(2-dimethylaminoethylamino)-4,5,6,7-tetrabromo-1H-benzimidazole.

22. (Previously presented) A method of treating human leukemia in a patient in the need of such treatment comprising administering to said patient a pharmaceutically-effective amount of the compound of **Formula 1**



Formula 1

wherein

R_1 is a hydrogen or an aliphatic group; and

R_2 is an aliphatic group, optionally substituted with a substituent selected from a hydroxyl and a substituted amino group.

23. (Previously presented) The method of Claim 22, wherein said compound of **Formula 1** is selected from the group consisting of 2-methylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-dimethylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-ethanolamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole; and 2-isopropylamino-4,5,6,7-tetrabromo-1H-benzimidazole; 2-(2-hydroxypropylamino)-4,5,6,7-tetrabromo-1H-benzimidazole; and 2-(2-dimethylaminoethylamino)-4,5,6,7-tetrabromo-1H-benzimidazole.